

METHODS OF FORMING A NONVOLATILE MEMORY DEVICE HAVING A
LOCAL SONOS STRUCTURE THAT USE SPACERS TO ADJUST THE
OVERLAP BETWEEN A GATE ELECTRODE AND A CHARGE TRAPPING
LAYER

Abstract of the Disclosure

A nonvolatile memory device is formed by forming a first oxide layer on a substrate. A nitride layer is formed on the first oxide layer. A second oxide layer is formed on the nitride layer. The second oxide layer is patterned so as to expose the nitride layer. A first polysilicon layer is formed on the second oxide layer and the
5 exposed portion of the nitride layer. The first polysilicon layer and the nitride layer are etched so as to expose the second oxide layer and the first oxide layer and to form polysilicon spacers on the nitride layer. The polysilicon spacers are etched so as to expose portions of the nitride layer. The exposed portions of the nitride layer may function as charge trapping layers. The exposed portion of the first oxide layer is
10 etched to expose a portion of the substrate. A third oxide layer is formed on the exposed portion of the substrate, the exposed portions of the nitride layer, and the second oxide layer. A second polysilicon layer is formed on the third oxide layer. The second polysilicon layer is planarized so as to expose the second oxide layer. The second polysilicon layer may function as a gate electrode that overlaps portions of the
15 charge trapping layers. The third oxide layer may function as a gate-insulating layer.